MANGALORE UNIVERSITY

National Education Policy – 2020
[NEP-2020]

BLOWNUP SYLLABUS OF
IV SEMESTER B.C.A.

Course Title: Python Programming	Course code: 21BCA3C10L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC10: Python Programming

Course Contents:

Topics	**Book**	**Chapter /Page No/Section**
UNIT 1[11 HOURS]		
Introduction to Python; Features, flavors of Python, Writing and Executing Python Program.	2	Page No 1 to 4, 10 ,11 ,31,32
Python Basics: Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments; Console Input and Console Output, Type Conversions.	1	Chapter 2 Complete
Python Control Flow: Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions.	1	Chapter 3 3.1 to 3.7
Exception Handling: Types of Errors; Exceptions; Exception Handling using try, except and finally.	1	Chapter 3 3.8 All subsections

Python Functions: Built in Functions. User defined functions: Definition-Syntax, Function Calling, Passing Parameters/arguments, the return statement; Scope and Lifetime of Variables in Functions,Default Parameters; Key Word Arguments; Command line Arguments.	1	Chapter 4 Complete
UNIT 2[11 HOURS]		
Strings: Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings-Concatenation, Comparison, Slicing and Joining, Traversing; Python String Methods,	1	Chapter 5 5.1 to 5.5 All Sub sections included
Lists: Creating Lists; Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists.	1	Chapter 6 6.1 to 6.5 All Sub sections included
Dictionaries: Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries.	1	Chapter 7 7.1 to 7.4 All Sub sections included
Tuples and Sets: Creating Tuples; Operations on Tuples; Built-in Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.	1	Chapter 8 8.1 to 8.4 ,8.7 ,8.9,8.10 All Sub sections included

UNIT 3 [10 HOURS]		
File Handling: File Types; Operations on Files– Create, Open, Read, Write, Close Files; File Names and Paths. **Object Oriented Programming:** Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading. **GU Interface:** The tkinter Module; Window and Widgets; Text, label ,Button , entry , Listbox ,checkbuttonRadiobutton ,scrollbar, Spinbox. Layout Management- pack, grid and place	1 1 2	Chapter 9 9.1 to 9.3 All sub sections included Chapter 11 11.1 to 11.5 ,11.7 to 11.9 All sub sections included Page.Nos 570,571,576,584 to 613
UNIT 4[10 HOURS]		
Python SQLite: The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables,Insert, Select, Update. Delete and Drop Records. **Data Analysis:** NumPy- Introduction to NumPy, Array Creation using NumPy, Operations on Arrays; Pandas- Introduction to Pandas, Series and DataFrames.	1	**Study material** Chapter 12 *12.3 to 12.3.5* 12.4 to 12.4.2 (uptopageNo 385)

Creating DataFrames from Excel Sheet and .csv file, Dictionary and Tuples. Operations on DataFrames.	2	P.No 694 to 701
Data Visualization: Introduction to Data Visualisation; Matplotlib Library; Different Types of Charts using Pyplot- Line chart, Bar chart and Histogram and Pie chart	2	P.No 705 to 712

Text Book:

1. Introduction to Python Programming by Gowrishankar S and Veena A.
2. Core Python Programming Dr. R. Nageshwara Rao.

Reference Books:

1. Think Python How to Think Like a Computer Scientist, Allen Downey et al., 2ndEdition, Green Tea Press. Freely available online @ https://www.greenteapress.com/thinkpython/thinkCSpy.pdf , 2015
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. Python Data Analytics: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, Apress®, 2015
4. Advance Core Python Programming, MeenuKohli, BPB Publications, 2021.
5. Core PYTHON Applications Programming, Wesley J. Chun, 3rd Edition, Prentice Hall, 2012.
6. Automate the Boring Stuff, Al Sweigart, No Starch Press, Inc, 2015.
7. Data Structures and Program Design Using Python, D Malhotra et al., Mercury Learning and Information LLC, 2021.
8. http://www.ibiblio.org/g2swap/byteofpython/read/
9. https://docs.python.org/3/tutorial/index.html

Course Title: Computer Multimedia & Animation	Course code: 21BCA3C11L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC11: Computer Multimedia & Animation

Topics	Book	Page No/Section
UNIT 1[11 HOURS]		
Web Design: Origins and evolution of HTML, Basic syntax, Basic text markup, Images, Lists, Tables, Forms, Frame, Overview and features of HTML5.	Book 1	Chapter 1: Page No: 3-49 Chapter 2: Page No: 55-82, 101 – 106 Chapter 3: Page No: 154 – 422 (In HTML element reference only following to be discussed comment, conditional comment, document type declaration, anchor tag, article tag, aside tag, audio tag, bold tag, body tag, line break tag, form button tag, table caption tag, center tag, div tag, dl tag, dt tag, emphasis tag, field set tag, figure tag, font tag, footer tag, form tag, h1 to h6 tag, head tag, header tag, ht tag, html tag, italic tag, iframe tag, image tag, input tag, label tag, legend tag, li tag, link tag, marquee tag, nav tag, ordered list, <p> tag, script tag, section tag, select tag, span tag, style tag, table tag and all table related tags, time tag, title tag, unordered list tag, video tag)
JavaScript: Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input.	Book 3	Chapter 1: Page No: 7-10 Chapter 2 to Chapter 8

		(Full Chapters) Chapter 09: Page No:224-228 Chapter 10: Page No:249-251, 255-256
UNIT 2[11 HOURS]		
CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The and tags; Overview and features of CSS3. **Animation:** Introduction, Start and End States, Interpolation, Animations in HTML. All About CSS Animations, Creating a Simple Animation, Detailed Look at the CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. All About CSS Transitions, Adding a Transition, Looking at Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions.	Book 4 Book 2	Introduction: Page No: 1-8 Chapter 1: Page No: 17-31 Chapter 2: Page No: 35-54 Chapter 3: Page No: 55-92 Chapter 6: Page No: 127-191 Chapter 7: Page No: 193-237 Page No: 14-20 Page No: 22-46 Page No: 47-60
UNIT 3[10 HOURS]		
HTML5 – SVG: Viewing SVG Files, Embedding SVG in HTML5, HTML5 − SVG Circle, HTML5 − SVG Rectangle, HTML5 − SVG Line, HTML5 − SVG Ellipse, HTML5 − SVG Polygon, HTML5 − SVG Polyline, HTML5 − SVG Gradients, HTML5 − SVG Star	Material supplied by University	
UNIT 4[10 HOURS]		
HTML5 – CANVAS: The Rendering Context, Browser Support, HTML5 Canvas Examples, Canvas - Drawing Rectangles, Canvas - Drawing Paths, Canvas - Drawing Lines, **Canvas** - Drawing Bezier Curves, Canvas - Drawing Quadratic Curves, Canvas - Using Images, Canvas - Create Gradients, HTML5 - Styles and Colors, Canvas - Text and Fonts, Canvas - Pattern and Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas -	Book 1 Material supplied by university	Page no: 82-100 Page no: 198-208 Material only for Canvas - Animation

Transforms, HTML5 Canvas - Composition, Canvas – Animations.		

Book 1: The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
Book 2: Animation in HTML, CSS, and JavaScript, Kirupa Chinnathambi, 1st Edition, Createspace Independent Pub, 2013.
Book 3: JavaScript – A Beginner's Guide, John Pollock, Mc Graw Hill Publications Third Edition
Book 4: CSS3 – The missing manual, David Sawyer McFarland, Third Edition, O'Reilly Media, Inc - 2012

Reference Books:

1. The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
2. Animation in HTML, CSS, and JavaScript, KirupaChinnathambi, 1st Edition, Createspace Independent Pub, 2013.
3. https://www.w3.org/Style/CSS/current-work#CSS3
4. http://bedford-computing.co.uk/learning/cascading-style-sheets-css/

Course Title: Operating System Concepts	Course code: 21BCA3C12L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

DSC8: Operating System Concepts

Course Contents:

Topics	**Book**	**Chapter /Page No/Section**
UNIT 1[11 HOURS]		
Introduction to Operating System: Definition, History and Examples of Operating System;	BOOK-1	BOOK 1 Chapter 1: 1.1 to 1.6(Page No:3-33)
Types of Operating Systems;	BOOK 2	BOOK 2 Chapter 1:1.2,1.3,1.4,1.5,1.6, 1.7,1.8(Page No:7-20)
Functions of Operating System; Systems Calls; Operating System Structure.	BOOK 1	BOOK 1 Chapter 2: 2.1 to 2.6,2.8 (Page No:55-76) (Page No:81-91)
File System: File Concepts-Attributes, Operations and Types of Files; File System; File Access methods; Directory Structure; Protection; File System	BOOK 1	BOOK 1 Chapter 13: 13.1 to 13.4 (Page No:529-555)

Implementation- File System Structure, Allocation Methods, Free Space Management.		Chapter 14: 14.1 to 14.5 (Page No:563-581)
UNIT 2[11 HOURS]		
Memory Management: Logical and Physical Address Space; Swapping; Contiguous Allocation; Paging; Segmentation; Segmentation with Paging. **Virtual Memory:** Introduction to Virtual Memory; Demand Paging; Page Replacement; Page Replacement Algorithms; Allocation of frames, Thrashing **Disk Scheduling (I/O Management):** Introduction and Scheduling Algorithm	BOOK- 1 Book-2 BOOK -1 BOOK-2	BOOK- 1 Chapter 9: 9.1,9.2, 9.3,9.4,9.5 (Page No:349-378) BOOK-2 Chapter 9:9.5 (Page No:303-312) BOOK- 1 Chapter 10: 10.1,10.2,10.3,10.4(Except 10.4.7 and 10.4.8),10.5,10.6 (Page No:389-412,413-425) BOOK-2 Chapter 14: 14.1-14.3 (Page No:491-502)
UNIT 3[10 HOURS]		
Process Management: Process Concept- Process Definition, Process State, Process Control Block, Threads; Process scheduling-	BOOK -1	BOOK -1

Multiprogramming, Scheduling Queues, CPU Scheduling, Context Switch; Operations on Processes- Creation and Termination of Processes; Inter process communication (IPC)- IPC Implementation Methods- Shared Memory and Message Passing; **CPU Scheduling:** Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling; Multiprocessor Scheduling; Real-Time CPU Scheduling	 BOOK -1	Chapter 3: 3.1,3.2,3.3,3.4,3.5,3.6 (Page No:105-132) BOOK -1 Chapter 5:5.1,5.2,5,3,5.4,5.5(5.5.1, 5.5.2),5.6(5.6.1,5.6.2,5.6.3) (Page No:199-224,227-232)
UNIT 4[10 HOURS]		
Process Synchronization: Introduction; Race Condition; Critical Section Problem and Peterson's Solution; Synchronization Hardware, Semaphores; Classic Problems of Synchronization- Readers and Writers Problem, Dining Philosophers Problem; Monitors. **Deadlocks:** System Model; Deadlocks Characterization; Methods for Handling Deadlocks; Deadlock	BOOK -1 BOOK -1	BOOK -1 Chapter 6: 6.1,,6.2,6.3,6.4,6.5,6.6,6.7 (Page No:257-282) BOOK -1 Chapter 7:7.1.1,7.1.2,7.1.3 (Page No:289-294) BOOK -1 Chapter 8:8.1 to 8.8

Prevention; Deadlock Avoidance; Deadlock Detection; and Recovery from Deadlock. **Multithreaded Programming:** Introduction to Threads; Types of Threads; Multithreading- Definition, Advantages; Multithreading Models; Thread Libraries; Threading Issues.	BOOK -1	(Page No:317-343) BOOK -1 Chapter 4:4.1,4.2,4.3,4.4,4.6 (Page No:188-194)

Text Book:

1. Operating System Concepts, Silberschatz' et al., 10thEdition, Wiley, 2018.
2. Operating System Concepts, Silberschatz' et al., 6thEdition,

Reference Books:

1. Operating System Concepts - Engineering Handbook, Ghosh PK, 2019.
2. Understanding Operating Systems, McHoes A et al., 7th Edition, Cengage Learning, 2014.
3. Operating Systems - Internals and Design Principles, William Stallings, 9th Edition, Pearson.
4. Operating Systems – A Concept Based Approach, Dhamdhere, 3rd Edition, McGraw Hill Education India.
5. Modern Operating Systems, Andrew S Tanenbaum, 4th Edition, Pearson"Computing with C# and the .NET Framework", Arthur Gittleman, 2nd Edition, Jones & Bartlett Publishers, 2011